

WHAT IS CLAIMED IS:

1. A short interfering RNA (siRNA) molecule that down regulates the expression of Staufén gene by RNA interference comprising a sense region and an antisense region, wherein said antisense region comprises a sequence complementary to a Staufén RNA sequence and the sense region comprises a sequence complementary to the antisense of said Staufén RNA sequence, and wherein the sense region of said siRNA is at least 95% identical to a portion of Staufén nucleic acid selected from the group consisting of: SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7.
2. The siRNA of claim 1, wherein said siRNA molecule is assembled from two nucleic acid fragments, wherein one fragment comprises the sense region and the second fragment comprises the antisense region of said siRNA molecule.
3. The siRNA of claim 2, wherein said sense region and said antisense region are covalently connected via a linker molecule.
4. The siRNA of claim 3, wherein said linker molecule is a polynucleotide linker molecule.
5. The siRNA molecule of claims 1, wherein said sense region comprises a 3'-terminal overhang of 1 to 5 nucleotides in length and said antisense region comprises a 3'-terminal overhang of 1 to 5 nucleotides in length.
6. The siRNA molecule of claims 1, wherein said said sense and antisense regions comprise at least one nucleotide that is chemically modified in at least one of sugar, base, or backbone moiety.
7. The siRNA molecule of claims 1, comprising a double stranded region of about 10 to 28 nucleotides in length.

8. The siRNA molecule of claim 7, wherein said siRNA molecule is linked to at least one receptor binding ligand.

9. The siRNA molecule of claim 8, wherein said receptor binding ligand is attached to the 5'-end, the 3'end or both ends of the sense or antisense region of the
5 siRNA molecule.

10. The siRNA molecule of claim 8, wherein said receptor binding ligand is a HIV-1 surface antigen.

11. The siRNA molecule of claim 1, wherein said siRNA molecule is between about 10 to 30 nucleotides in length.

10 12. The siRNA molecule of claim 1, wherein said Staufen RNA sequence is a portion of a sequence selected from the group consisting of: SEQ ID NO:5, SEQ ID NO:1, SEQ ID NO:7, SEQ ID NO:3, and SEQ ID NO:6.

13. The siRNA molecule of claim 1, wherein said sense region comprises the sequence of SEQ ID NO:52.

15 14. An expression vector comprising a nucleic acid sequence encoding at least one siRNA molecule of claim 1, in a manner that allows the expression of thereof.

15. The expression vector of claim 14, wherein said siRNA molecule comprises a single strand having complementary sense and antisense region.

20 16. The expression vector of claim 14, wherein said siRNA molecule comprises two distinct strands having a complementary region.

17. A mammalian cell harboring an expression vector of claim 14.

18. A method for treating or preventing a RNA virus infection in a mammalian subject comprising administering thereto a pharmaceutical composition

comprising an siRNA, that reduces Staufer protein expression by RNA interference thereby lowering virus replication or infectivity.

19. The method of claim 8, wherein the mammalian subject is a human.

20. The method of claim 18, wherein the RNA virus is selected from the group consisting of: HIV-1, HIV-2, CasBr, MLV, and Reovirus.

21. A pharmaceutical composition comprising an siRNA of claim 1 together with a suitable pharmaceutical carrier.

22. A method of inducing targeted RNA interference in a subject, comprising administering thereto an effective amount of the siRNA of claims 1.

23. A pharmaceutical composition for treating or preventing an RNA virus infection in a subject comprising an agent that modulates endogenous Staufer protein expression, together with a suitable pharmaceutical carrier, wherein said agent selected from the group consisting of:

a) a nucleic acid encoding a Staufer protein of SEQ ID NO:2, SEQ ID NO:4, and SEQ ID NO:10 or a portion thereof;

b) a Staufer protein or portion thereof having a sequence selected from the group consisting of: SEQ ID NO:5, SEQ ID NO:1, SEQ ID NO:7, SEQ ID NO:3, and SEQ ID NO:6;

c) an antisense oligonucleotide, comprising at least 10 contiguous nucleotides at least 95% complementary to anyone of SEQ ID NO:5, SEQ ID NO:1, SEQ ID NO:7, SEQ ID NO:3, SEQ ID NO:10, and SEQ ID NO:6; and

d) a siRNA that down regulates Staufer expression.

24. The pharmaceutical composition of claim 23, wherein said siRNA is

an siRNA of claims 1-13.

25. A Chimeric protein capable of being incorporated into a HIV-1 or HIV-2 virion, comprising a first and a second portion, wherein said first portion encodes a Staufen protein or portion thereof capable of binding viral double stranded RNA and
5 selected from the group consisting of: SEQ ID NO:2, SEQ ID:4, SEQ ID NO: 10, and SEQ ID NO: 8.

26. The chimeric protein of claim 25, wherein said second portion is a polypeptide covalently attached to the N- or C-terminus of said first portion.

27. The chimeric protein of claim 26, wherein said polypeptide
10 fragment comprises an amino acid sequence which prevents proper virion morphogenesis or assembly of said HIV-1 or HIV-2 virion.

28. A vaccine to treat or prevent a RNA virus infection in a human comprising, a mammalian Staufen protein or fragment thereof selected from the
15 group consisting of SEQ ID NO:2, SEQ ID:4, SEQ ID NO: 10, and SEQ ID NO: 8, or a nucleic acid sequence encoding said Staufen protein or fragment thereof, whereby upon administration of an effective amount of said vaccine to said human an immune reaction is elicited thereby treating or preventing said RNA virus infection.

20 29. The vaccine of claim 28, further comprising a second immunogenic peptide or nucleotide sequence encoding said immunogenic peptide to increase its immunological efficiency in human.

25 30. The siRNA of Claim 3, comprising nucleotides 505-568 of SEQ ID NO:56.